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Authors' Affiliation:

¹Master student in Medical-Surgical Nursing, Faculty of Nursing and Midwifery, Zabol University of Medical Sciences, Zabol, Iran

²Department of Nursing, Faculty of Nursing and Midwifery, Zabol University of Medical Sciences, Zabol, Iran

*Corresponding author

Department of Nursing, Faculty of Nursing and Midwifery, Zabol University of Medical Sciences, Zabol, Iran
Email: rahnema2030@gmail.com

ORCID List

Mahla Lotfi	0009-0001-9136-4170
Mozhgan Rahnema	0000-0002-4248-2314
Elaheh Asadi-Bidmeshki	0000-0002-4288-6247
Abdolghani Abdollahimohammad	0000-0002-7929-5539
Mahin Naderifar	0000-0001-8183-3503

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Educational program effects on knowledge, attitude and performance of parents of thalassemia children: A quasi-experimental study

Mahla Lotfi¹, Mozhgan Rahnema^{2*}, Elaheh Asadi-Bidmeshki², Abdolghani Abdollahimohammad², Mahin Naderifar²

ABSTRACT

Objectives: Most of the parents of thalassemia children do not have sufficient knowledge and proper attitude and performance in facing the process of their child's disease. One of the ways to reduce the problems of thalassemia patients is to improve the knowledge, attitude and performance of their parents to manage preventable problems through educational programs. Therefore, this study evaluated the impact of the teach-back care program on the knowledge, attitude and performance of parents of children with thalassemia. **Methods:** Sixty-two parents of children with β -thalassemia in Zabol, Iran participated in this quasi-experimental study. The samples were randomly assigned into intervention and control groups. A demographic questionnaire and a knowledge, attitude and performance scale for thalassemia patients were used for data collection. **Results:** The results of independent t-tests did not show a statistically significant difference in the knowledge and attitude scores before the intervention in the two intervention and control groups ($P \geq 0.005$). But after the intervention, a statistically significant difference was observed between the knowledge and attitude scores in the two groups ($P \leq 0.001$). Mann-Whitney U test, there was no statistically significant difference in the performance mean scores before the intervention in the two interventions and control groups ($P \geq 0.005$). However, after the intervention, a statistically significant difference was observed in the mean performance scores between the groups ($P \leq 0.001$). **Conclusions:** The results suggest the effectiveness of the teach-back method in improving the awareness, attitude and performance of parents of children with thalassemia in line with the implementation of their children's care plan.

Keywords: Attitude, Awareness, Care program, Parents, Performance, Teach-back, Thalassemia

1. INTRODUCTION

β-thalassemia is a congenital disorder with the loss or reduction of one of the globin chains in red blood cells and is a serious concern for the public health of the world (Cheng et al., 2018). About 3% (150 million) of the world's population are β-thalassemia patients and by 2018, 30,000 β-thalassemia patients lived in Iran and this increased by nearly 1,000 people every year (Shahsavari et al., 2022). β-thalassemia is the most common type in Iran (Bazi and Miri-Moghaddam, 2016).

Chronic diseases are a crisis for family members (Koshapor et al., 2018). Parents often feel losing basic control of life (Tluczek et al., 2022). Parents of children with β-thalassemia experience many challenges that need to be improved (Nabavian et al., 2023). Lack of knowledge about the disease (Naz et al., 2022), treatment process, complications and prognosis of the disease, economic consequences of the disease (Shahsavari et al., 2022) and diet (Chin et al., 2019) are their essential needs.

Thalassemia affects the physical and mental health of sufferers (Cheng et al., 2018) and causes physical problems such as chronic anemia, bone deformities, impaired growth and puberty and heart failure (Robatsarpooshi et al., 2015). In addition, severe forms of thalassemia cause suffering to parents as well (Cheng et al., 2018). They may experience psychosocial problems e.g., fear anxiety and despair after receiving the diagnosis. The other problems that may challenge the parents are probable separation from the child, lack of knowledge of the prognosis of the disease, long-term care, society's reactions to the disease (Tluczek et al., 2022).

One of the effective ways to reduce the problems of β-thalassemia patients and their families is to improve their knowledge, attitude and performance of them to manage the disease and its complications (Jeesh et al., 2018). Having awareness and a positive attitude is the basis for accepting and performing beneficial (non-harmful) behaviors (Robatsarpooshi et al., 2015).

There are various methods for teaching health behaviors, which can be referred to as feedback teaching (Bahri et al., 2018). Teach-back is a feedback training method for improving communication skills, knowledge and attitude for illiterate or low-literate people (Alishahi et al., 2021; Zhang, 2021). In this technique, the instructors express the educational content in a simple and understandable language without using medical terms and then the learners express the contents to show their learning. If the learners do not understand the contents well, the instructors repeat those (Ahmadidarrehshima et al., 2016).

In general, considering the possibility of a positive effect of the awareness and attitude of mothers of children with β-thalassemia on their caregiving skills on the one hand and the importance of the teach-back method as a useful educational method for any type of population, especially people with no health literacy and the key role of nurses in empowering formation of parents of children with β-thalassemia (Bala and Sarin, 2014), this study was carried out to determine the impact of the care empowerment training program on the knowledge, attitude and performance of mothers of β-thalassemia children.

2. MATERIALS AND METHODS

This quasi-experimental study pre-test post-test design with a control group was conducted to explore the effect of the empowerment program on the knowledge, attitude and performance of parents of children with β-thalassemia Zabol, Iran. The inclusion criteria included having a β-thalassemia child under 7 years old, the ability to understand Persian, not participating in similar educational programs in the past and currently, not having vision and hearing problems and having the ability to communicate. Unwilling to proceed in the meetings and incompleting the questionnaires were exclusion criteria.

Overall, 62 eligible parents were randomly allocated into intervention (31 people) and control (31 people) groups. The sample size was estimated based on Oshvandi et al., (2014) study with a confidence of 99%, a statistical power of 90% and a 20% attrition rate. The formula of mean differences was applied for estimating sample size (Abdollahimohammad and Firouzkouhi, 2019).

$$n = 2C \times \left(\frac{\sqrt{SD1^2 + SD2^2}}{M1 + M2} \right)^2$$

A demographic questionnaire and a Knowledge, Attitude and Performance Scale for β-thalassemia (KAPSBT) were used for data collection. The demographic profile questionnaire consisted of age, gender, education level, residence, insurance status, income, number of children and number of children with β-thalassemia in the family. The KAPSBT consisted of 29 items in three sub-scales. The first subscale measures the knowledge of parents of children with β-thalassemia using 15 items with 3 options *yes*, *no* and *do not know*.

This sub-scale comprised 4 parts, including the *nature of the disease* with 4 items (1, 2, 3, 7), the *treatment and care program* with 7 items (6, 8, 9, 10, 11, 12, 14), the *nutrition program* with 2 items (13, 15) and the *prevention of disease* 2 items (4, 5). The knowledge level ranges from 0-15. The second subscale measures the attitude of parents of children with β-thalassemia regarding the care and treatment plan using 10 Likert-type items ranging from 1 (completely disagree) to 5 (completely agree). The attitude sub-scale score

ranges from 10-50. The third subscale measures the performance of parents of children with β -thalassemia, using 4 items with yes and no options.

The total score of performance ranges from 0-4. Qualitative and quantitative methods were used for the content validity of the KAPSBT scale. Nine nursing experts confirmed the quality of the contents. To check content validity quantitatively, the content validity index (CVI) and content validity ratio (CVR) was measured based on a panel of experts' opinions. The CVR and CVI were between 0.89 and 0.94. The reliability of the knowledge and performance sub-scales were 0.545 and 0.41, respectively and the attitude subscale was 0.762 using Cronbach's alpha.

The implementation of the training program for the intervention group was carried out individually in the morning shift from April 2022 to February 2023. The number of training sessions for each parent varied between 3 and 6 sessions of 60-90 minutes depending on the learning, patience and opportunities of the parents. The training program included the definition of β -thalassemia, symptoms, diagnosis methods and special care of children with β -thalassemia, including nutrition, medications, treatment inheritance and prevention of complications. The questionnaires re-completed after 45 days of the program finished.

The control group only received the routine training of the clinic, but after completing post-test questionnaires, the care plan pamphlets were given to them. Zabol University of Medical Sciences was approved the study with code IR.ZBMU.REC.1401.008. Informed consent was obtained from the participants and they were assured about the confidentiality of the information. Withdrawing from the study was also free at any stage.

3. RESULTS

In this study, 62 parents of children with β -thalassemia participated and their average age was 36.25 ± 11.55 (intervention group) and 34.09 ± 10.57 (control group). The average age of β -thalassemia children was 3.30 ± 1.63 (intervention group) and 4.01 ± 1.47 (control group). The number of children in both groups varied between 1 and 7. The majority of participants had one and the rest had two children with β -thalassemia. The gender, education level, residence, insurance status, income level and the number of people with β -thalassemia in the family variables were homogeneous.

Table 1 Demographics of parents of children with β -thalassemia

Variable		Intervention n (%)	Control n (%)	χ^2	P
Gender	Man	7(23.3)	7(23.3)	0.944	0.005
	Woman	23(76.7)	24(77.4)		
Education	Illiterate	12(38.7)	5(16.1)	0.113	4.36
	High school	13(41.9)	20(64.5)		
	Diploma	6(19.4)	6(19.4)		
Address	Village	25(80.6)	20(64.5)	0.155	2.02
	City	6(19.4)	11(35.5)		
Insurance	Yes	25(80.6)	28(90.3)	1	0
	No	6(19.4)	3(9.7)		
Relative	Father	7(22.6)	6(19.4)	0.298	1
	Mother	24(77.4)	22(71.0)		

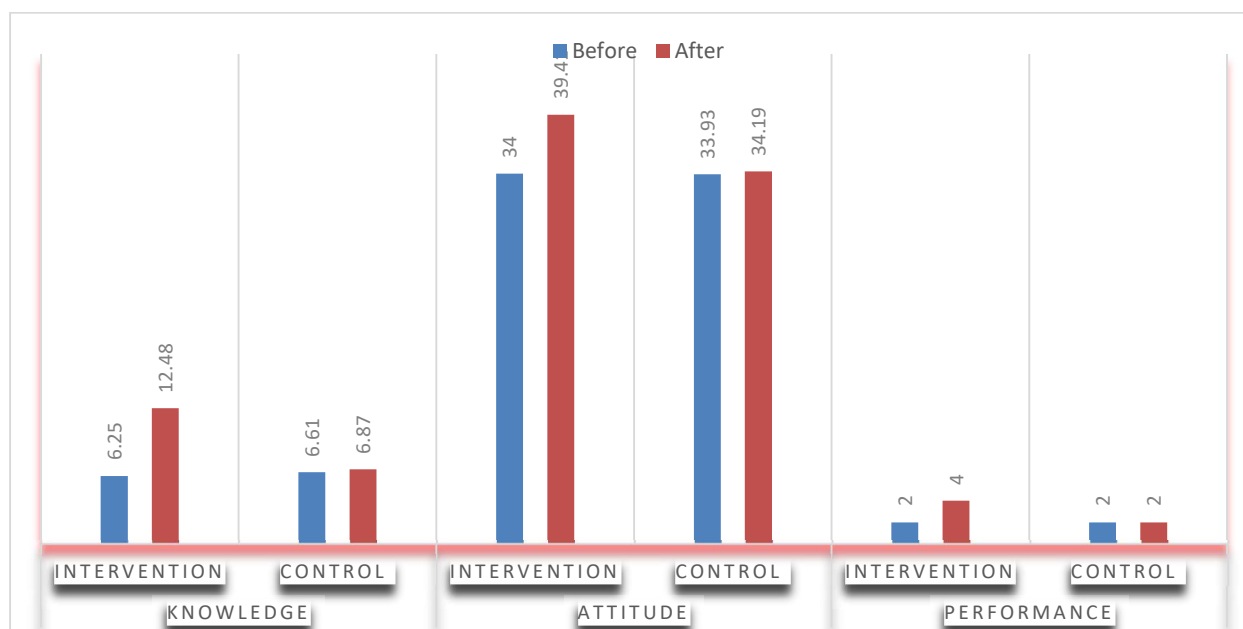
Table 2 represents the independent t-test did not show a significant difference in the knowledge and attitude scores before the intervention in the intervention and control groups ($P \geq 0.005$). However, the scores of awareness and attitude were higher in the intervention group after the educational program ($P \leq 0.001$). Meanwhile, the Mann-Whitney U Test did not show a significant difference in the performance scores in the pre-test ($P \geq 0.005$), but after the intervention, a statistically significant difference was achieved in the post-test scores between groups ($P \leq 0.001$).

Table 2 Comparing knowledge and attitude scores of β -thalassemia children's parents

Variable		Intervention Mean (SD)	Control Mean (SD)	T	95% CI	P
Knowledge	Before	6.25(2.25)	6.61 (2.24)	-0.62	-1.49, 0.78	0.537
	After	12.48 (1.58)	6.87 (1.96)	12.37	4.70, 6.51	≤ 0.001
Attitude	Before	34(3.40)	33.93 (3.90)	0.07	-1.79, 1.92	0.945
	After	39.41(4.19)	34.19 (3.81)	5.13	3.18, 7.26	≤ 0.001

Table 3 Median and interquartile range of performance scores of parents of β -thalassemia children

Variable		Intervention Median (IQR)	Control Median (IQR)	χ^2	P
Performance	Before	2 (1)	2 (2)	-0.26	0.767
	After	4 (1)	2 (1)	5.60	≤ 0.001

**Figure 1** Knowledge, attitude and performance of parents of β -thalassemia children

4. DISCUSSION

Training program using the teach-back method was effective in the knowledge, attitude and performance of parents of children with β -thalassemia. This result was probably due to the suitability of the teach-back method used to influence the awareness, attitude and performance of these parents. As Arlinghaus and Johnston, (2017) state using appropriate educational methods is necessary to identify and strengthen the factors affecting behavior.

The researcher did not find a similar study in which the teach-back method was used to educate parents of children with β -thalassemia, but several studies have confirmed the positive impact of this method in educating parents of children without β -thalassemia, including improving health awareness in mothers with premature children (Amini et al., 2021), improving the vaccination knowledge of mothers (Giannakou et al., 2021), improving the quality of life of mothers after childbirth (Ghiasvand et al., 2017), increasing the resilience of mothers of mentally retarded children (Moghimani et al., 2017) and improving the sense of self-sufficiency and satisfaction of mothers of children have heart defects (Ghoneim and Fathalla, 2018), which are in line despite the difference in the educational content and the research community.

Since they have been conducted on mothers as one of the main caregivers of children and mothers have a more prominent role in the care of thalassemia children and spend the most time with them (Shahsavari et al., 2022), they have been found suitable for comparison with the present study findings. From the researcher's point of view, education and raising the level of parents' knowledge is the main pillars for empowering families. Empowerment programs develop the learner's knowledge and skills (Bala

and Sarin, 2014). The result of the present study shows the effectiveness of implementing a family-oriented intervention to improve care for β -thalassemia children by empowering their mothers.

A study by Minaei-Moghadam et al., (2021) on the knowledge and attitude of mothers of children with β -thalassemia suggested the use of empowering models in the care of the patients. Besides, Biabani et al., (2020) emphasized educational-supportive interventions for improving the adaptive behaviors of mothers of β -thalassemia children and its continuous evaluation is suggested in the care program for these children.

The study findings are significant from another point of view as well. Increasing awareness positively correlates to improving the attitude and performance of these parents. Minaei-Moghadam et al., (2021) state that correct knowledge can lead to appropriate healthy behavior. Behavior is a function of a person's knowledge and attitude and by changing one's attitude; a person can be led toward healthy behaviors. Besides, attitude is the robust predictor of behavior (Nasirzadeh and Aligol, 2019). The parents of children with β -thalassemia might be acquired knowledge from other sources such as media, which may be a limitation of the study.

5. CONCLUSIONS

The results suggest the teach-back effectiveness in improving the knowledge, attitude and performance of parents of children with β -thalassemia. This method fits the educational needs of parents to empower them to provide necessary care for their children.

Abbreviations

KAPSBT: Knowledge, Attitude and Performance Scale for β -thalassemia

CVR: Content Validity Ratio

CVR: Content Validity Index

CI: Confidence Interval

M: Mean

SD: Standard Deviation

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Authors' contributions

Mahla Lotfi conducted the program, collected the data and wrote the manuscript; Mozhgan Rahn timer, Ellahe Asadi-Bidmishki and Mahin Naderifar supervised and edited the original manuscript; Abdolghani Abdollahimohammad analyzed the data; Mozhgan Rahn timer and Abdolghani Abdollahimohammad revised the first draft and performed professional editing.

Ethical approval

This paper has been extracted from a Master thesis in Medical-Surgical nursing, which was approved by the Zabol University of Medical Sciences, Iran with a code of ethics IR.ZBMU.REC.1400.008.

Informed consent

Formal and oral informed consent was obtained from all individual participants before conducting the study.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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